HAZARD ANALYSIS FORM

This form can be used by Fermilab Employees, Fermilab Supervisors, Fermilab Task Managers and Construction Subcontractors. This is a dynamic document which may require modification as the project moves from start to finish and should be readily available at the site where the work is being performed.

Note: Not all sections of the first page are applicable to every job or task, complete what is necessary for your specific job or task.

Job Title: Installing CRT panels at LArTF.

Job Location: LArTF

Contract/Work Order #:

TO BE COMPLETED FOR WORK INVOLVING SUBCONTRACTORS

Subcontractor (if applicable)

Company:

Project Manager:

Phone: Page:

ESH Rep.:

Phone: Page:

Fermilab

Project Eng./C.M.:

Phone:

TM/CC/SC:

Phone: Page:

ESH Rep.:

Phone: Page:

AT LEAST TWO SIGNATURES ARE REQUIRED

☐ Prepared _____ Date: Aug 23, 2016

Print Name: John Voirin

☐ Accepted Angela Aparicio Date: 8/31/16

Print Name: Angela Aparicio

☐ Accepted as noted Stephen R. Hahn Date: 08/31/16

Print Name: Stephen R. Hahn

Description of Work: Panels will be brought into LArTF on a frame in the horizontal position. They will be picked up using a vacuum lifting fixture. Safety straps will be applied and the panels will be lowered by crane to the bottom level of LArTF. Here the panel will be rotated into the proper orientation. Personnel in lifts will then guide the panel into the vertical assemblies and secure with clips. The assembly will then be rolled with guidance into its final position. After installation perrsonnel will connect the wiring for readout and power as necessary.

Personal Protective Equipment: (Check protective equipment required for the job)

- ☒ Safety glasses ☐ Side shields
- ☐ Hearing Protection
- ☐ 3.0 Brazing goggles
- ☐ Face shield
- ☐ Leather gloves
- ☐ Chemical resistant gloves (specify type):
- ☒ Other required PPE (specify): Escape packs
- ☐ Chemical splash goggles
- ☒ Hard Hats
- ☐ Impact goggles
- ☐ Rubber apron
- ☐ Hot/Cold thermal protective gloves
- ☐ Respirators
- ☐ Fall protection equipment (specify):

Environmental Aspects (check one):

- ☐ Yes, I have thought about the envionmental aspects of this job and will document such aspects and mitigation steps within this document.
- ☒ Yes, I have thought about the environmental aspects of this job and no such credible aspects exist and therefore do not need to be written in this document.

Equipment required for the job: (List the tools needed to perform the job.)

Hand tools. Anver vacuum lifting fixture, personnel lifts Crane (in house)

Work plan history information: (List any lessons learned incidents from this job, tips from previous jobs)

Improvement/Feedback: At the conclusion of the job, the Task Manager, Supervisor and / or Project Leader shall work with those involved to consider lessons learned and receive in order to improve future work plans.

Check one:

- ☐ **Yes** we have considered lessons learned and accepted feedback on this job and will communicate such information so that in future work plans may be improved.
- ☒ **Yes** we have considered lessons learned feedback and determined that future work plans do not need to be improved.

Utilizing the format below, identify hazards and environmental aspects, and their corresponding safety precautions/procedures to mitigate hazards. Use as many sheets as necessary.

HAZARD ANALYSIS

Description	Hazards/ Environmental Aspects	Precautions / Safety Procedures
Move panels and equipnent into LArTF	Crane, Fork truck	Use trained operators. Keep non essential personnel out of the are FOR THE WHOLE TASK
Put Lifts into position and move vertical assemblies to be used into position.	Back strain, finger pinch. lift dangers.	Use help. Move slowly. Keep fingers clear. Use trained operators in lifts.
Connect one panel to vacuum fixture.	Dropping damaging panel	Vacuum fixture must be inspected daily before use. Inspectors must be qualified to inspect. Follow procedure for vacuum fixture use.. Keep
Lift panel from cart and position for moving down to lower level. Proceed to lower.	Damage to people below. Equipment.	personnel clear. Fixture operators must be qualified to do so.
Personnel below receive load and secure. Rotate if needed. Guide load up to installation position. Guide panel into lower "H" clips. Rotate panel to match vertical hanger. Attach upper "H" clips.	Crane and rigging hazards People below load. Unauthorized people in work area. Working from Lifts.	Follow procedure for vacuum fixture use.. Keep personnel clear. Use tag line to control. Keep people from under load. Use (2) safety straps on load.
Release vacuum from fixture and allow panel to assume normal position. Roll panel assembly into final position.	Swinging load. Pinch Hazard. Crane load in area	Use trained operator on crane and in lifts. Follow procedure for rotating and using fixture. Do not go under load. Keep area secure. Move panel slowly.
Take fixture up from area. Return to top to retrieve the next panel.	Crane work. Rigging hazard	Prepare for load to release. Have tag line on fixture. Keep hands clear of pinch areas.
		Use trained operators. Use tag lines. Use good communication throughout exercise.
Working in lifts	Extended escape time	Personnel in lifts shall have escape packs due to extended escape time.
Operating and building power failure.	Panel suspended. Loose vacuum.	Known hang time > 1.5 hours. Have location of generator. Procure and replenish vacuum as needed. If possible use lift to secure panel with straps.
Only qualified Anver fixture operators can utilize the lifting fixture		Please see attached list for qualified operators.

GUIDELINES FOR COMPLETING THE HAZARD ANALYSIS

Phase of Work	Safety Hazard	Precautions / Safety Procedures
Examining a specific job by breaking it down into a series of steps or tasks, will enable you to discover potential hazards employees may encounter. Each job or operation will consist of a set of steps or tasks. For example, the job might be to move a box from a conveyor in the receiving area to a shelf in the storage area. To determine where a step begins or ends, look for a change of activity, change in direction or movement. Picking up the box from the conveyor and placing it on a hand truck is one step. The next step might be to push the loaded hand truck to the storage area (a change in activity). Moving the boxes from the truck and placing them on the shelf is another step. The final step might be returning the hand truck to the receiving area. Be sure to list *all* steps needed to perform the job. Some steps may not be performed each time; an example could be checking the casters on the hand truck. However, if that step is generally part of the job it should be listed.	A hazard is potential danger to a person or equipment. The purpose of the Job Safety Analysis is to identify ALL hazards - both those produced by the environment and those connected with the job procedure. To identify hazards, ask yourself these questions about each step: Is there a danger of the employee striking against, being struck by, or otherwise making injurious contact with an object? Can employees be caught in, by, or between objects? Is there potential for slipping, tripping, or falling? Could the employee suffer strains from pushing, pulling, lifting, bending, or twisting? Is the environment hazardous to safety and/or health (toxic gas, vapor, mist, fumes, dust, heat, or radiation)? Are there electrocution hazards? Close observation and knowledge of the job is important. Examine each step carefully to find and identify hazards - the actions, conditions, and possibilities that could lead to an accident. Compiling an accurate and complete list of potential hazards will allow you to develop the recommended safe job procedures needed to prevent accidents.	Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the hazards that could lead to an accident, injury or occupational illness. Begin by trying to: 1) engineer the hazard out; 2) provide guards, safety devices, etc.; 3) provide personal protective equipment; 4) provide job instruction training; 5) maintain good housekeeping; 6) insure good ergonomics (positioning the person in relation to the machine or other elements in such a way as to improve safety). List the recommended safe operating procedures. Begin with an action word. Say exactly what needs to be done to correct the hazard, such as, " lift using your leg muscles." Avoid general statements such as, "be careful", "use caution", and "be alert". List the required or recommended personal protective equipment necessary to perform each step of the job. Give a recommended action or procedure for each hazard. Serious hazards should be corrected immediately. The JSA should then be changed to reflect the new conditions. Finally, review your input on all three columns for accuracy and completeness. Determine if the recommended actions or procedures have been put in place. Re-evaluate the job safety analysis as necessary.

I have reviewed this hazard analysis and I understand the hazards and required precautionary action. I will follow the requirements of this hazard analysis or notify my supervisor or Fermilab contact if I am unable to do so.

Name	ID #	Signature	Date

Anver Vacuum Lifting Fixture Qualified Operator List

I acknowledge that I have received training to operate the Anver vacuum lifting fixture. While operating this device I will follow the procedures that are laid out in the Procedures and JHAs associated with the jobs at hand.

Name (Must be FNAL Employee)	ID#	Date	Trainer (Must be FNAL Employee)
John Cornele	6208	8.31.16	[illegible]
[illegible]	2972	8/31/16	04940N
Tim Griffin	5108	8/31/16	
Otto Alvarez	11284	8/31/16	
Tom Olszanowski	5036	8/31/16	
Mark Shoun	4959	8/31/16	
Bob Kubinski	5025	8/31/16	[illegible] 04940N